

Indiana's K-12 Plan for Technology

*On Line...On Target...
On Demand...
Learning Systems*

**Serving Indiana's
Students, Families, and Communities**

**INDIANA DEPARTMENT OF EDUCATION
STRATEGIC PLAN**

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www.doe.state.in.us/olr/projects/techplan.html

Indiana's K-12 Plan for Technology: 1999-2001

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The following sections of the technology plan are posted on the web:

[<www.doe.state.in.us/olr/projects/techplan.html>](http://www.doe.state.in.us/olr/projects/techplan.html)

Partnerships, Collaboration, and Coordination: Summaries of a growing list of partners

Appendices for reference and greater detail of programs

Underlying Principles of Vision
Snapshot of K-12 Technology: Status
Prior Funding: Indiana Legislative Initiatives from 1997-1999
Indiana Scientific Instrument Project
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INTRODUCTION

The well-being of Indiana's citizens will be determined, in large part, by the state's ability to remain competitive in a world marketplace. To do this, our educational systems must ensure that students can read, write, compute, and perform other basic and higher-order thinking and problem-solving skills as well as manage, use, and communicate with the technologies they will encounter as lifelong learners. Failure to succeed in this endeavor could dim the bright hopes and dreams of Indiana's students and future leaders.

The purpose of *Indiana's K-12 Plan for Technology: On Line... On Target... On Demand... Learning Systems* is to lay a foundation of leadership and direction to support and strengthen learning environments by working with educators, state agencies, legislators, parents and families, communities, and members of business and industry to promote effective uses of technology for teaching and learning.

VISION

Communities of learners are engaged in lifelong learning and are contributing members of the global and digital information world—learners who have problem-solving and higher-order critical thinking skills, information and communication skills, access to current and real-world information and tools, and mastery of core basic skills.

For students to live this vision:

- They must have on-demand access to appropriate technologies (including hardware and connections), content standards, and teachers who are highly skilled in the uses of technology.
- Families, communities, and other partners must provide support and active involvement in the learning process.
- Legislators, policymakers, and others must understand and act on well-defined plans and requests for funding and policies that remove red-tape and empower school districts to support students in active, engaged lifelong learning.

GOALS

- To enhance and improve student learning in and out of school
- To use technologies as tools to help teachers improve their teaching
- To enhance the learning environments, both within and beyond the classroom, in order to engage all members of the community in successful pursuit of lifelong learning opportunities

BENEFITS

Students will achieve real-world, educational benefits from improved educational environments. (Adapted from 1997 STaR Report, CEO Forum on Education and Technology, <www.ceoforum.org>)

Education Objective	Classroom Technology Use	Real-World Benefits
Improve higher-order critical thinking skills	Computers used by students in project based, learner-centered inquiry. Student work supported by real world information accessed via CD-ROM or the Internet. Software simulation programs designed to encourage problem solving.	Technology adaptive high school graduates with workplace competencies such as information management, inquiry, evaluation, communication, team work and personal initiative.
Improve communication	Improve communication among students, teachers, administrators, parents and the community. Improved/instantaneous feed-back time. Community members plugged-in to schools and aware of education issues.	Access to a wider audience of parents, teachers and students.
Improve access to remote resources	Teachers and students access libraries, remote information sources, experts. Distance learning applications used.	More informed students who have had access to current, real world information.
Master basic skills	Drill and tutorial software provides individualized instruction with immediate feedback in basic subjects. Educational software provides at-risk students or those with disabilities a tailored educational environment. ¹	Students with mastery of core basic skills. Improved standardized test scores across subject areas such as language arts, math, and science.

¹ Indiana recognizes that drill and practice software, while it has its place, is not appropriate in all circumstances.

Educators will use the available technology as tools in creating innovative learning environments, in assessing and accessing their own professional development needs and solutions, and in improving their own management and efficiency.

Parents will have more opportunities to be involved in their children's learning, to have more information, and to improve their own knowledge and skills.

Others—The business community, libraries, legislature, and other entities will be true partners in helping to create learning environments and will see better use of human and fiscal resources.

SEVEN STRATEGIES

The Indiana Department of Education and its partners recognize that important elements of lifelong learning are motivation, relevancy, high content standards and proficiencies, and aligned curriculum development. These elements, combined with the seven key strategies—professional development, hardware, connectivity, content, planning, evaluation, and partnerships--create and support strong learning communities of students, educators, families, and their communities. In order to realize the vision, Indiana must:

I. Provide ongoing professional development.

An effective professional workforce will be continually aware of the ways technology can be used most effectively for enriching and enhancing learning, for exploring new approaches to teaching and learning, and for using it to meet their teaching goals.

II. Ensure hardware access for all learners.

Indiana students will have equitable access to up-to-date, appropriate, interactive technologies, including connectivity technologies.

III. Ensure connectivity for all learners.

Students will have access to educational multimedia resources for classrooms, libraries, and other instructional and administrative centers via voice, video, and data connections; extended learning activities, opportunities, and general information will be available to the public, including parents and families.

IV. Provide high quality content and teaching resources.

Students will have appropriate content standards and instructional approaches and enhanced educational growth opportunities through technology on line and on demand.

V. Plan for technology.

Schools will have three-year technology plans that are part of, or guided by, the collective school improvement plans of the corporation or the strategic plan of the school corporation.

VI. Evaluate plans, measure progress, and report.

Accountability and data collection efforts will measure the progress toward fulfilling the purposes, goals, and strategies of this plan.

VII. Coordinate programs, ensure funding, and involve partners.

Coordinated deployment of services and technologies, efficient utilization of funding resources, and the synergy of partnerships will accelerate the development of technology-rich learning environments for students and communities in the State.

ACTIONS AND RECOMMENDATIONS

I. Provide ongoing professional development.

- A. Local school corporations and stand-alone educational units should provide opportunities for educators to participate in ongoing professional development at the local, regional, or state level. Initially, the corporations should provide training for at least one-third (1/3) of the educators each year; within a three (3) year period all educators within a district should engage in local training for integration of technology.
- B. Educators will create personalized professional development plans for using technology tools; plans will include their goals, benchmarks, and activities for (a) classroom integration to help students achieve state standards and proficiencies in the content areas, (b) improving their own productivity, and (c) improving accountability to and communication with students, families, and communities.
- C. The Department will coordinate a multi-agency, multi-level committee—with members from libraries, special education co-ops, state agencies (such as Workforce Development), Educational Service Centers (ESCs), school corporations, not-for-profits, and universities—that coordinates and facilitates effective planning, development, and delivery of professional development experiences and content for educators.
- D. The Department and local, regional, and state entities—such as universities, libraries, ESCs, not-for-profits, and local school corporations—will provide opportunities for educators to learn best practices and experience effective ways that technologies can impact teaching and learning, to experiment with ways to apply them most appropriately in their learning environments, and to share knowledge and experiences. The professional development opportunities must be consistent with curriculum, state standards and proficiency guides, Indiana information skills, and effective pedagogy.
- E. Training opportunities should focus on the changing roles of the teacher, the patterns of student technology use and effective uses of technology for teaching and learning and for moving schools toward the “Target Tech” goals such as those found in the CEO Forum STaR Chart assessment tool.
- F. Teacher training institutions, the Indiana Professional Standards Board, and other policymaking bodies will ensure that preservice and student teachers have opportunities to learn effective

- practices for applying technology skills to curricular areas and to experience technology-rich learning environments in order to be prepared for jobs in Indiana and for license renewal.
- G. For maximum impact, local school corporations must coordinate their professional development funds from local, state, and federal sources; e.g., use of Capital Projects Fund (CPF), Eisenhower funds, Title I funds, Educate Indiana grants, Technology Innovation and Literacy Challenge grants.
- H. Educators will have access to online, on-target, on-demand resources—“just-in-time learning systems”—as appropriate, in addition to other resources such as local coaches and mentors, external consultants, videos, workshops, and conferences. Such resources might be provided by local programs, Indiana State Library, State Instructional Materials Service from the Department, regional entities such as ESCs, universities, and other partnerships.
- I. Indiana General Assembly must provide funding for additional teacher training time including days for training.
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II. Ensure hardware access for all learners.

- A. Students will learn in technology-rich learning environments with (a) adequate and appropriate computers and other technologies, (b) special purpose technologies such as scientific instruments (See appendix: Scientific Instrument Project), and (c) technologies that provide access to voice, video, and data resources that are online, on-demand, and on-target.
- B. Funding mechanisms will enable every educator to have a computer and related technologies (including “distance learning” equipment such as two-way video), available for professional development, improved productivity and efficiency, and creating technology-rich learning environments, as needed.
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III. Ensure connectivity for all learners.

- A. All partners, including state level policymakers, will promote statewide, high-speed, interoperable systems to enable all learners, educators, and communities to have online, on-target, on-demand resources and information.
- B. While the “older” technologies (fax, email, Internet, telephone, and VCR) remain effective and important, schools should have the resources to use advanced delivery technologies to create “distance learning” environments and professional development.

- C. Policymakers and legislators will create special funding mechanisms for stand-alone educational units other than school corporations (such as special education cooperatives, career and area vocational schools, and educational service centers) to access these same telecommunications systems.
- D. Schools will be encouraged to apply for Universal Service Fund (federal Telecommunications Act of 1996) discounts for services and hardware, as applicable, and to leverage funds for these services.
- E. The Department will recommend and disseminate minimum standards regarding infrastructure, particularly wiring and networks, to ensure connectivity and ability to use future technologies.
- F. The Department and the Access Indiana partners, along with other entities such as the Corporation for Educational Communications, other not-for-profits, and the ESCs, will coordinate their planning efforts to maximize investments and leverage other funding sources for connectivity and services.

IV. Provide high quality content and teaching resources.

- A. The Department will collaborate with other entities and partners to expand and develop online content resources for educators, to provide curriculum frameworks, to develop online professional development opportunities, to provide research-based teaching models and effective practices, and to disseminate those resources.
- B. The Department will continue to provide leadership in the development and refinement of state standards and proficiencies in all curricular areas and to assure that the use of technology resources and tools are embedded in these where appropriate.
- C. All content should have high standards that encompass higher level thinking, problem-solving, and information processing skills.
- D. Each school corporation should provide school information and resources to the public, including parents and families, via electronic means such as bulletin boards and web servers.

V. Plan for technology.

- A. Each school corporation will review, evaluate, maintain, and annually update a comprehensive technology plan that includes at least professional development, curriculum and integration, hardware selection criteria, and equipment maintenance and replacement schedules. (Indiana, 1993) Each school corporation

- eligible for the Technology Plan Grant Program (Indiana, 1995) will have a comprehensive technology plan—reviewed and approved by the Department—that is a part of, or closely linked to, the school improvement plans.
- B. Although not specifically required by law, other educational entities such as area career and area vocational centers, special education cooperatives, state institutions, and other support entities should develop comprehensive technology plans. The Indiana regional Educational Service Centers (ESCs), recognizing the importance of planning, have themselves created comprehensive plans for their centers; each ESC should provide planning assistance to schools that they service.
- C. The Indiana Department of Education and other institutions—such as, but not limited to, the Indiana Educational Service Centers, universities, not-for-profits, and external consultants selected by the school corporations—will assist local districts in developing comprehensive plans and may offer planning resources including expertise, print and non print materials, and planning and awareness sessions to promote uses of technology.
- D. All school corporations will post their plans on local web sites (or the Department’s web site) for purposes of local planning, implementation, and making information available to parents and families, school boards, communities, and other districts.
- E. All school corporations will include provisions within their technology plans to gather and report progress of the plans and should make this information available electronically to the educators, families, and communities.
- F. Legislation should be enacted to amend the 1993 statute on technology plans to require a 3- year plan instead of a 5-year plan and to encourage creation of individual school building plans as part of the school corporation’s technology plan.
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VI. Evaluate plans, measure progress, and report.

- A. The Indiana General Assembly must allow local school corporations to report technology receipts and expenditures apart from other funds accounts in order to track technology expenditures and report progress for this plan.
- B. The Department will collect and analyze data, seek collaborations with other entities to collect data, and report appropriate measures toward the progress of the school corporations in implementing technology-rich learning environments. Financial data also will include technology receipts and

- expenditures reported by the local school corporations.
- C. School corporations will measure progress toward their technology plan goals. Such measures will include a minimum set of data deemed appropriate at the local and state levels.
- D. Beginning in the Year 2002 (or the year after all school corporations have been funded once in the Technology Plan Grant Program), criteria such as those in the CEO Forum StaR Chart may be used for benchmarking progress, especially in professional development and integration in the classroom, and for determining future funding.
- E. The Superintendent of Public Instruction will present an annual report to the State Board of Education and the Indiana General Assembly summarizing progress towards the strategies and actions of this plan. All related information, including the report, will be posted on the Department's web site.
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VII. Coordinate programs, ensure funding, and involve partners.

- A. Per the Indiana State Board of Education, "Learning opportunities shall be sufficient to achieve standards. All schools shall be expected to engage in continuous processes to improve teaching and learning such as parental involvement and community partnerships." (6/3/98)
- B. The Assistant Superintendent for the Center for School Improvement and Performance, the Special Assistant for Technology, the Instructional Technology Coordinator, and the Legislative Liaison at the Indiana Department of Education will administer this plan and, along with the Access Indiana planning team and a growing list of partners, will explore and develop means to accelerate the progress toward strategies and actions set forth in this plan, including exploring and developing funding resources.
- C. The Department and local school corporations will seek additional partners such as business, industry, hospitals, universities, professional organizations, foundations. Each partner will indicate its goals and activities that relate to the support of teaching and learning and learning environments using the framework of the four pillars: hardware, connectivity, content, and professional development with curriculum integration and use.

TECHNOLOGY CAN WORK: A RESEARCH SUMMARY

Do educational technologies work?

Policymakers, parents, and the general public all ask the same question. While it may be tempting to take stacks of research reports and say, “This many say ‘technology works,’ this many say it doesn’t, and this many suggest the results are inconclusive”; this scorecard approach does not give policymakers the information they need for thoughtful analysis and strategic planning. Simple answers never do.

To ask if technology works is almost the equivalent of saying “Do textbooks work?” Yes, some textbooks “work,” in some conditions, with some teachers, with some students, but these same textbooks may not “work” in another educational context. Clearly the question of technology effectiveness requires us to be clear in what results we seek, how we measure success, and how we define effectiveness.

In considering research on technology, several caveats must be taken into account. The technology keeps changing; as hardware and software evolve, new educational opportunities appear.

- educational technologies are used in classroom settings which rarely provide optimal conditions for their use
- it is inappropriate to take research results and generalize their findings across grade levels, students, subject matter, types of technologies, and applications
- the teacher is a key variable in technology implementation and effectiveness

- and, finally, technology's impact on teachers and their practice should be considered as important as student effects, for students move on, but teachers remain to influence many generations of students.

Technology Can Play a Positive Role

Despite these caveats, research indicates that when teachers are trained and encouraged to use technology across the curriculum and when technology is pervasive in the classroom, technology can improve education.

... in Enhancing Basic Skills

Recent studies found positive effects at all school levels, subject areas, and for both regular and special education students. The conclusion:

- the use of technology as a learning tool can make a measurable difference in student achievement, attitudes, and interactions with teachers and other students

The choice of words is important: “*can* make a measurable difference,” not “*will* make a measurable difference.”

Writing achievement is another key “basic skills” area where technology has provided positive benefits: students writing more and with greater proficiency. When a sound model of teaching writing is used, researchers have found that students using word processing have demonstrated higher levels of achievement than those writing without the support of word-processing.

... in Developing Higher Order Skills

Many educators maintain that technology may offer the most promise as a tool for advanced skill acquisition and for supporting new models of teaching and learning. The use of educational technology to help students develop higher order skills of problem-solving, and the ability to access, organize, display, and communicate information are the components least likely to be measured on traditional pencil and paper standardized tests. As the tests become more sophisticated in assessing student performance on problem solving tasks, it will require close analysis of how technology use and higher level thinking are correlated. Assessing the impacts is even more complex.

...in Producing Information Age Skills

How well does technology become a vehicle for students' developing the very skills that the technology itself requires; that is, in developing the technological fluency that will enable them to work and thrive in the information age? Because technologies change so rapidly, students do not need to be trained to use a specific piece of hardware or software. Rather, research tells us that what is necessary is general understanding of technological applications, enthusiasm and confidence to try new things, and the ability to "think with technology"—to know when technology can help solve a problem or

complete a task, and when other means are more appropriate. It also means being able to use the tools of the technological age in ways that experts use them.

Here, too, there is less hard research data to prove effectiveness, but there are promising examples. In science projects like Global Lab, students don't just study science, they do science, focusing on a study site in their local community, using technological tools for collecting, analyzing, and sharing environmental data worldwide.

Technological resources give them authentic contexts, tools, and collaborative opportunities to work as historians, scientists, economists, scholars, entrepreneurs, and even politicians!

Technology for Distance Learning

Much of the research is no longer asking if distance education courses can be as effective as conventional classroom instruction, but rather, who learns best in distance learning settings and why. Whether the students learn or not depends less on the medium than on the characteristics of the learners and on numerous other variables of program design, instruction, and administration, as well as content variables.

For greater detail of this research conducted by Kathleen Fulton, University of Maryland, see the appendix.

Conclusion

While there is much research to be done to provide a better understanding of why and how technology benefits the educational process (both teaching and learning), the body of evidence to date suggests that new technologies provide powerful vehicles for educational improvement.

It would be inappropriate to wait until tomorrow for documentation in all areas if this delay kept today's students from the opportunities technology can offer in a range of educational applications.

Indiana's K-12 Plan for Technology: On Line...On Target...On Demand...Learning Systems
was approved on November 23, 1998, by the Educational Technology Council.

ACKNOWLEDGMENTS

The appointed membership of the Educational Technology Council, per Indiana Code 20-10.1-25.5, “shall advise the state superintendent and the governor on education related technology initiatives.”

The Council provided guidance, wisdom, and support to the Indiana Department of Education in the development of Indiana’s K-12 technology plan.

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